EXAMINER'S AMENDMENT & STATEMENT OF REASONS FOR ALLOWANCE

Table of Contents

Amendments & Claim Status

[1] This Examiner's Amendment & Statement of Reasons of Allowance is responsive to Request for Reconsideration Under 37 C.F.R. § 1.111 ("Amendment") received May 28, 2009 and Interview Summary (the "telephone interview") dated Sep. 16, 2009 (see attached Paper No. 20090916). Claims 1, 3-4, 6, 8-9, 11-14, 16, and 18-20 remain pending; claims 2, 5, 7, 10, 15 and 17 cancelled.

Claim Rejections - 35 U.S.C. § 103

[2] In response to the telephone interview, the previous 35 U.S.C. § 103 rejections are withdrawn.

Formal Examiner's Amendment

[3] This formal Examiner's Amendment is responsive to the telephone interview. Authorization for this examiner's amendment was given in the telephone interview with Farhad Shir (Reg. No. 59,403).

Amendment to the Claims

1. (Currently Amended) An image processing apparatus for obtaining processed compressed moving image data by carrying out image enhancement processing on compressed moving image data, the image processing apparatus comprising:

division means for dividing the compressed moving image data into a target part to be corrected and a non-target part not to be corrected;

decoding means for obtaining decoded data by decoding the target part;

correction means for obtaining corrected decoded data by carrying out the image enhancement processing on the decoded data;

encoding means for encoding the corrected decoded data; [[and]]

combination means for obtaining the processed compressed moving image data by combining the target part that has been encoded with the non-target part[[,]] ;

block division means for dividing the non-target part into intra blocks and inter blocks,

the decoding means further obtaining decoded intra blocks by decoding the intra blocks,

the correction means further obtaining corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks,

the encoding means further obtaining corrected intra blocks by encoding the corrected decoded intra blocks, and

the combination means obtaining the processed compressed moving image data by combining the corrected decoded data and the corrected intra blocks with the inter blocks, and

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing.

2. (Cancelled.)

3. (Currently Amended) An image processing apparatus for obtaining processed compressed moving image data by carrying out image enhancement processing on compressed moving image data obtained according to a compression method using a first frame as a reference frame, the image processing apparatus comprising:

division means for dividing the compressed moving image data into the first frame and other frames;

decoding means for obtaining a decoded first frame by decoding the first frame;

correction means for obtaining a corrected decoded first frame by carrying out the image enhancement processing on the decoded first frame;

encoding means for obtaining a corrected first frame by encoding the corrected decoded first frame; [[and]]

combination means for obtaining the processed compressed moving image data by combining the corrected first frame with the other frames[[,]] ; and

block division means for dividing the other frames into intra blocks and inter blocks,

the decoding means further obtaining decoded intra blocks by decoding the intra blocks,

the correction means further obtaining corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks,

the encoding means further obtaining corrected intra blocks by encoding the corrected decoded intra blocks, and

the combination means obtaining the processed compressed moving image data by combining the corrected decoded first frame and the corrected intra blocks with the inter blocks, and

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing.

4. (Currently Amended) An image processing apparatus for obtaining processed compressed moving image data by carrying out image enhancement processing on compressed moving image data comprising intra frames and inter frames, the image processing apparatus comprising:

division means for dividing the compressed moving image data into the intra frames and the inter frames;

decoding means for obtaining decoded intra frames by decoding the intra frames;

correction means for obtaining corrected decoded intra frames by carrying out the image enhancement processing on the decoded intra frames;

encoding means for obtaining corrected intra frames by encoding the corrected decoded intra frames; [[and]];

combination means for obtaining the processed compressed moving image data by combining the corrected intra frames with the inter frames[[,]] ;

block division means for dividing the inter frames into intra blocks and inter blocks,

the decoding means further obtaining decoded intra blocks by decoding the intra blocks,

the correction means further obtaining corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks,

the encoding means further obtaining corrected intra blocks by encoding the corrected decoded intra blocks, and

the combination means obtaining the processed compressed moving image data by combining the corrected intra frames and the corrected intra blocks with the inter blocks,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing.

5. (Cancelled.)

6. (Currently Amended) An image processing apparatus for obtaining processed compressed moving image data by carrying out image enhancement processing on compressed moving image data comprising I frames, P frames, and B frames, the image processing apparatus comprising:

division means for dividing the compressed moving image data into the I frames, the P frames and the B frames;

decoding means for obtaining decoded I frames and decoded P frames by decoding the I frames and the P frames;

correction means for obtaining corrected decoded I frames and corrected decoded P frames by carrying out the image enhancement processing on the decoded I frames and on the decoded P frames;

encoding means for obtaining corrected I frames and corrected P frames by encoding the corrected decoded I frames and the corrected decoded P frames; [[and]]

combination means for obtaining the processed compressed moving image data by combining the corrected I frames and the corrected P frames with the B frames[[,]] ; and

block division means for dividing the B frames into intra blocks and inter blocks,

the decoding means further obtaining decoded intra blocks by decoding the intra blocks,

the correction means further obtaining corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks,

the encoding means further obtaining corrected intra blocks by encoding the corrected decoded intra blocks, and

the combination means obtaining the processed compressed moving image data by combining the corrected I frames, the corrected P frames, and the corrected intra blocks with the inter blocks,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing.

7. (Cancelled.)

8. (Currently Amended) An image processing apparatus for obtaining processed compressed moving image data by carrying out image enhancement processing on compressed moving image data mainly comprising discrete cosine transform (DCT) coefficient data and motion vector data of each frame, the image processing apparatus comprising:

extraction means for extracting the DCT coefficient data and the motion vector data from the compressed moving image data;

decoding means for obtaining decoded data by decoding the compressed moving image data with use of the DCT coefficient data and the motion vector data;

correction means for obtaining corrected decoded data by carrying out the image enhancement processing on the decoded data; and

encoding means for obtaining the processed compressed moving image data by encoding the corrected decoded data,

wherein the encoding means encodes the corrected decoded data by using the motion vector data obtained by the extraction means, [[and]]

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing,

wherein the compressed moving image data comprises intra frames and inter frames, and

wherein in said image processing:

block division means divides the inter frames into intra blocks and inter blocks;

decoding means obtains decoded intra blocks by decoding the intra blocks;

correction means obtains corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks;

encoding means obtains corrected intra blocks by encoding the corrected decoded intra blocks; and

combination means obtains the processed compressed moving image data by combining the corrected decoded data and the corrected intra blocks with the inter blocks.

9. (Currently Amended) An image processing apparatus for obtaining processed compressed moving image data by carrying out image enhancement processing on compressed moving image data comprising a plurality of frames, the image processing apparatus comprising:

division means for dividing the compressed moving image data into target frames and non-target frames;

decoding means for obtaining decoded frames by decoding the target frames;

correction means for obtaining corrected decoded frames by carrying out the image enhancement processing on the decoded frames;

encoding means for obtaining corrected frames by encoding the corrected decoded frames; and

combination means for obtaining the processed compressed moving image data by combining the corrected frames with the non-target frames, wherein the correction means comprises:

correction parameter calculation means for calculating a correction parameter for each of the decoded frames by using data of a corresponding decoded frame;

parameter adjustment means for obtaining an adjusted parameter for each of the decoded frames by adjusting the correction parameter thereof, with use of the correction parameter for the decoded frame or frames that at least one of precedes and follows the decoded frame corresponding to the correction parameter that is going to be adjusted; and

correction execution means for carrying out the image enhancement processing on each of the decoded frames by using the adjusted parameter,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing, and

wherein the parameter adjustment means sets the adjusted parameter for each of the decoded frames as an average of the correction parameter thereof and the correction parameter of at least one of the decoded frames that at least one of precedes and follows the corresponding decoded frame.

10. (Cancelled.)

11. (Currently Amended) An image processing apparatus for obtaining processed compressed moving image data by carrying out image enhancement processing on compressed moving image data comprising an intra frame and inter frames, the image processing apparatus comprising:

division means for dividing the compressed moving image data into the intra frame, target inter frames and non-target inter frames;

decoding means for obtaining decoded frames comprising a decoded intra frame and decoded target inter frames by decoding the intra frame and the target inter frames;

correction means for obtaining corrected decoded frames by carrying out the image enhancement processing on the decoded frames;

encoding means for obtaining corrected frames by encoding the corrected decoded frames; [[and]]

combination means for obtaining the processed compressed moving image data by combining the corrected frames with the non-target inter frames[[,]] ; and

block division means for dividing the inter frames into intra blocks and inter blocks,

the decoding means further obtaining decoded intra blocks by decoding the intra blocks,

the correction means further obtaining corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks,

the encoding means further obtaining corrected intra blocks by encoding the corrected decoded intra blocks, and

the combination means obtaining the processed compressed moving image data by combining the corrected decoded frames and the corrected intra blocks with the inter blocks,

wherein the correction means carries out the image enhancement processing on the decoded intra frame by calculating a correction parameter therefor and on the decoded target inter frames by using the correction parameter of the decoded intra frame that immediately precedes the decoded target inter frames, and

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing.

12. (Currently Amended) A machine-readable storage medium encoded with a computer program causing a computer to carry out image processing for obtaining processed compressed moving image data through image enhancement processing on compressed moving image data, the image processing comprising:

dividing the compressed moving image data into a target part to be corrected and a non-target part not to be corrected;

decoding the target part for obtaining decoded data;

carrying out the image enhancement processing on the decoded data for obtaining corrected decoded data;

encoding the corrected decoded data; and

combining the target part that has been encoded with the non-target part for obtaining the processed compressed moving image data,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing, and

wherein in said image processing:

block division means divides the non-target part into intra blocks and inter blocks;

decoding means obtains decoded intra blocks by decoding the intra blocks;

correction means obtains corrected decoded intra blocks by carrying out the

image enhancement processing on the decoded intra blocks;

encoding means obtains corrected intra blocks by encoding the corrected decoded intra blocks; and

combination means obtains the processed compressed moving image data by combining the corrected decoded data and the corrected intra blocks with the inter blocks.

13. (Currently Amended) A machine-readable storage medium encoded with a computer program causing a computer to carry out image processing for obtaining processed compressed moving image data through image enhancement processing on compressed moving image data obtained according to a compression method using a first frame as a reference frame, the image processing comprising:

dividing the compressed moving image data into the first frame and other frames;

decoding the first frame for obtaining a decoded first frame;

carrying out the image enhancement processing on the decoded first frame for obtaining a corrected decoded first frame;

encoding the corrected decoded first frame for obtaining a corrected first frame;

combining the corrected first frame with the other frames for obtaining the processed compressed moving image data,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing, and

wherein in said image processing:

block division means divides the other frames into intra blocks and inter blocks;

decoding means obtains decoded intra blocks by decoding the intra blocks;

correction means obtains corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks;

encoding means obtains corrected intra blocks by encoding the corrected decoded intra blocks; and

combination means obtains the processed compressed moving image data by combining the corrected first frame and the corrected intra blocks with the inter blocks.

14. (Currently Amended) A machine-readable storage medium encoded with a computer program causing a computer to carry out image processing for obtaining processed compressed moving image data through image enhancement processing on compressed moving image data comprising intra frames and inter frames, the image processing comprising:

dividing the compressed moving image data into the intra frames and the inter frames;

decoding the intra frames for obtaining decoded intra frames;

carrying out the image enhancement processing on the decoded intra frames for obtaining corrected decoded intra frames;

encoding the corrected decoded intra frames for obtaining corrected intra frames; and

combining the corrected intra frames with the inter frames for obtaining the processed compressed moving image data,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing,

dividing further comprising dividing the inter frames into intra blocks and inter blocks,

decoding being decoding the intra frames and the intra blocks for obtaining the decoded intra frames and decoded intra blocks,

carrying out the image enhancement processing being carrying out the image enhancement processing on the decoded intra frames and on the decoded intra blocks for obtaining the corrected decoded intra frames and corrected decoded intra blocks,

encoding being encoding the corrected decoded intra frames and the corrected decoded intra blocks for obtaining the corrected intra frames and corrected intra blocks, and

combining being combining the corrected intra frames and the corrected intra blocks with the inter blocks for obtaining the processed compressed moving image data.

15. (Cancelled.)

16. (Currently Amended) A machine-readable storage medium encoded with a computer program causing a computer to carry out image processing for obtaining processed compressed

moving image data through image enhancement processing on compressed moving image data comprising I frames, P frames, and B frames, the image processing comprising:

dividing the compressed moving image data into the I frames, the P frames and the B frames;

decoding the I frames and the P frames for obtaining decoded I frames and decoded P frames;

carrying out the image enhancement processing on the decoded I frames and on the decoded P frames for obtaining corrected decoded I frames and corrected decoded P frames;

encoding the corrected decoded I frames and the corrected decoded P frames for obtaining corrected I frames and corrected P frames; and

combining the corrected I frames and the corrected P frames with the B frames for obtaining the processed compressed moving image data,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing,

dividing further comprising dividing the B frames into intra blocks and inter blocks,

decoding being decoding the I frames, the P frames, and the intra blocks for obtaining the decoded I frames, the decoded P frames and decoded intra blocks,

carrying out the image enhancement processing being carrying out the image enhancement processing on the decoded I frames, the decoded P frames and the decoded intra blocks for obtaining the corrected decoded I frames, the corrected decoded P frames, and corrected decoded intra blocks,

encoding being encoding the corrected decoded I frames, the corrected decoded P frames and the corrected decoded intra blocks for obtaining the corrected I frames, the corrected P frames and corrected intra blocks, and

combining being combining the corrected I frames, the corrected P frames, and the corrected intra blocks with the inter blocks for obtaining the processed compressed moving image data.

17. (Cancelled.)

18. (Currently Amended) A machine-readable storage medium encoded with a computer program causing a computer to carry out image processing for obtaining processed compressed moving image data through image enhancement processing on compressed moving image data mainly comprising discrete cosine transform (DCT) coefficient data and motion vector data of each frame, the image processing comprising:

extracting the DCT coefficient data and the motion vector data from the compressed moving image data;

decoding the compressed moving image data with use of the DCT coefficient data and the motion vector data for obtaining decoded data;

carrying out the image enhancement processing on the decoded data for obtaining corrected decoded data; and

encoding the corrected decoded data for obtaining the processed compressed moving image data,

wherein encoding being encoding the corrected decoded data by using the motion vector data obtained at extracting,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing,

wherein the compressed moving image data comprises intra frames and inter frames, and

wherein in said image processing:

block division means divides the inter frames into intra blocks and inter blocks;

decoding means obtains decoded intra blocks by decoding the intra blocks;

correction means obtains corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks;

encoding means obtains corrected intra blocks by encoding the corrected decoded intra blocks; and

combination means obtains the processed compressed moving image data by combining the corrected decoded data and the corrected intra blocks with the inter blocks.

19. (Currently Amended) A machine-readable storage medium encoded with a computer program causing a computer to carry out image processing for obtaining processed compressed moving image data through image enhancement processing on compressed moving image data comprising a plurality of frames, the image processing comprising:

dividing the compressed moving image data into target frames and non-target frames;

decoding the target frames for obtaining decoded frames;

carrying out the image enhancement processing on the decoded frames for obtaining corrected decoded frames;

encoding the corrected decoded frames for obtaining corrected frames; and

combining the corrected frames with the non-target frames for obtaining the processed compressed moving image data ,

wherein carrying out the image enhancement processing further comprises:

calculating a correction parameter for each of the decoded frames by using data of a corresponding decoded frame;

obtaining an adjusted parameter for each of the decoded frames by adjusting the correction parameter thereof with use of the correction parameter for the decoded frame or frames that at least one of precedes and follows the decoded frame corresponding to the correction parameter that is going to be adjusted; and

carrying out the image enhancement processing on each of the decoded frames by using the adjusted parameter,

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing, and

wherein in said image processing:

block division means divides the non-target frames into intra blocks and inter blocks;

decoding means obtains decoded intra blocks by decoding the intra blocks;

correction means obtains corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks;

encoding means obtains corrected intra blocks by encoding the corrected decoded intra blocks; and

combination means obtains the processed compressed moving image data by combining the corrected decoded frames and the corrected intra blocks with the inter blocks.

20. (Currently Amended) A machine-readable storage medium encoded with a computer program causing a computer to carry out image processing for obtaining processed compressed moving image data through image enhancement processing on compressed moving image data comprising an intra frame and inter frames, the image processing comprising:

dividing the compressed moving image data into the intra frame, target inter frames and non-target inter frames;

decoding the intra frame and the target inter frames for obtaining decoded frames comprising a decoded intra frame and decoded target inter frames;

carrying out the image enhancement processing on the decoded frames for obtaining corrected decoded frames;

encoding the corrected decoded frames for obtaining corrected frames; [[and]]

combining the corrected frames with the non-target inter frames for obtaining the processed compressed moving image data[[,]] , and

block division means for dividing the non-target inter frames into intra blocks and inter blocks,

the decoding means further obtaining decoded intra blocks by decoding the intra blocks,

the correction means further obtaining corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks,

the encoding means further obtaining corrected intra blocks by encoding the corrected decoded intra blocks, and

the combination means obtaining the processed compressed moving image data by combining the corrected decoded frames and the corrected intra blocks with the inter blocks,

wherein carrying out the image enhancement processing is carrying out the image enhancement processing on the decoded intra frame by calculating a correction parameter therefor and on the decoded target inter frames by using the correction parameter of the decoded intra frame that immediately precedes the decoded target inter frames, and

wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness processing.

Allowable Subject Matter

[4] **Claims 1, 3-4, 6, 8-9, 11-14, 16,** and **18-20** allowed.

Reasons for Allowance

[5] The following is an examiner's statement of reasons for allowance:

Regarding **claim 1, 3-4, 6, 8, 11-14, 16,** and **18-20**,

while the prior art teaches division means for dividing the compressed moving image data into part A to be corrected and part B to not be corrected,

the prior art of record does not teach blocking division means for dividing part B into intra blocks and inter blocks, decoding means further obtaining decoded intra blocks by decoding the intra blocks, the correction means further obtaining corrected decoded intra blocks by carrying out the image enhancement processing on the decoded intra blocks, wherein the image enhancement processing comprises at least one of gradation correction, white balance correction, density correction, and sharpness correction.

Part A and B above refer to

(i) "target part" and "non-target part", respectively, for claim 1;

(ii) "first frame" and "other frames", respectively, for claim 3, 13;

(iii) "intra frames" and "inter frames", respectively, for claims 4, 8, 14, 18;

(iv) "I frames, the P frames" and "B frames", respectively, for claim 6, 16;

(v) "intra frame" and "target inter frames and non-target inter frames", respectively, for claim 11

(vi) "target part to be corrected" and "non-target part to be corrected", respectively, for claim 12;

(vii) "target frames" and "non-target frames", respectively, for claim 19; and

(viii) "intra frame, target inter frames" and "non-target inter frames", respectively, for claim 20.

Regarding **claim 9** while the prior art teaches division means for dividing the compressed moving image data into target frames and non-target frames,

the prior art of record does not teach combination means for obtaining the processed compressed moving image data by combining the corrected frames with the non-target frames, wherein the correction means comprises: correction parameter calculation means for calculating a correction parameter for each of the decoded frames by using data of a corresponding decoded frame; parameter adjustment means for obtaining an adjusted parameter for each of the decoded frames by adjusting the correction parameter thereof, with use of the correction parameter for the decoded frame or frames that at least one of precedes and follows the decoded frame corresponding to the correction parameter that is going to be adjusted.

[6] Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

[7] Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID P. RASHID whose telephone number is (571)270-1578 and fax number (571)270-2578. The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

/Bhavesh M Mehta/
Supervisory Patent Examiner, Art Unit 2624

David P Rashid
Examiner
Art Unit 26244